

NJCCCS AREA: Math
North Brunswick Township Public Schools

Academic Support for Math – Grade 7

Acknowledgements

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Revision_____

Board Adoption_____

New Jersey Core Curriculum Content Standard Area: Mathematics

Topic/Course: Academic Support for Math– Grade 7 Grade: 7 Date: 8/2008

Essential Question NJCCC Standard	NJCCCS – Skills/Objectives/ Areas of Focus	Instructional Strategies Activities/ Materials / Technology Interdisciplinary Connections Cultural Diversity	Modifications ELL / Special Education Academic Support/ G&T	Assessments Formative Summative Benchmarks	PACING
<p>4.1.7.A1 How can we construct meanings for rational numbers, integers, & whole numbers with exponents?</p> <p>4.1.7.A2 How can we compare and contrast numbers?</p> <p>4.1.7.B3 How can we use and explore procedures for performing calculations with paper & pencil, mental math, and a calculator?</p> <p>Also addresses: 4.3.7.D1,3,4 How can we graph on a number line, use algebraic operations & apply properties</p>	<p>CMP2 – Accentuate the Negative Integers & Rational Numbers</p> <ul style="list-style-type: none"> • Use appropriate notation to indicate positive and negative numbers • Locate rational numbers on a number line • Compare and order rational numbers • Develop algorithms for adding, subtracting, multiplying and dividing positive and negative numbers • Use parentheses and order of operations correctly 	<ul style="list-style-type: none"> • Use counters to represent the addition and subtraction of signed numbers • Use dry-erase graph boards to graph coordinates • Create a “life-sized” number line on the floor to locate, compare, and order numbers • Create Order of Operations posters and memory devices in cooperative groups 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for Accentuate the Negative (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • <i>See Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>September through Mid-October (12 Days)</p>

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<p>4.3.7.A1 How can we describe and extend patterns involving whole numbers, rational numbers, and integers: with tables, verbal and symbolic rules, graphs, simple equations or expressions?</p> <p>4.3.7.C1 How can we analyze functional relationships to explain how a change in one quantity can result in a change in another, using pictures, graphs, charts, and equations?</p>	<p>CMP2 – Variables & Patterns <i>Introducing Algebra</i></p> <ul style="list-style-type: none"> • Recognize situations where changes in variables are related in useful patterns • Describe patterns of change shown in words, tables and graphs of data • Construct tables and graphs to display relations among variables • Use algebraic symbols to write rules and equations relating variables relations 	<ul style="list-style-type: none"> • Use Algebra Tiles to represent linear relationships • Graph functions on dry-erase boards • Have 3 teams – table, equation, & graph. Rotate to translate information into each form. • Use spreadsheets, graphing calculators, and other technology • Use activities from <i>Navigating through Algebra</i> 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for Variables & Patterns (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • <i>See Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>Mid-October- November (14 Days)</p>

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<p>4.1.7.A3 How can we understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations?</p> <p>4.1.7.A5 How can we use whole numbers, fractions, decimals, and percents to represent equivalent forms of the same number?</p> <p>Also addresses: 4.1.7.C1 How can we use equivalencies to estimate?</p>	<p>CMP2 – Comparing & Scaling <i>Ratio, Proportion, & Percent</i></p> <ul style="list-style-type: none"> • Use ratios, fractions, differences, and percents to form comparison statements in a given situation • Apply proportional reasoning to solve for the unknown part when one part of two equal ratios is unknown • Scale a ratio, rate, or fraction to make a larger or smaller object or population with the same relative characteristics as the original 	<ul style="list-style-type: none"> • Use fraction tiles to represent equivalent fractions • Use <i>Decimal Squares</i> and related teacher materials to compare decimals and create equivalencies • Create equivalency tables, number lines, and pictorial representations • Use real-world data to demonstrate uses of proportions • Scale recipes using proportions • Compare unit prices to find the best buy (use flyers and other ads) 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for Comparing & Scaling (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • <i>See Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>December through Mid-January (13 Days)</p>

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<p>4.4.7.B3 How can we estimate probabilities and make predictions based on experimental and theoretical probabilities?</p> <p>4.4.7.B4 How can we play and analyze probability-based games, and discuss the concepts of fairness and expected value?</p>	<p>CMP2 – What Do You Expect? <i>Probability & Expected Value</i></p> <ul style="list-style-type: none"> • Interpret experimental and theoretical probabilities and the relationship between them • Distinguish between equally likely and non-equally likely outcomes • Review strategies for identifying possible outcomes and analyzing probability, such as using lists or tree diagrams • Determine if a game is fair or unfair 	<ul style="list-style-type: none"> • Play games involving spinners, dice • Model probabilities using marbles, color counters, spinners, & dice • Create organized lists and tree diagrams to describe possible outcomes and choices • Use activities from <i>Navigating through Data</i> 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for What Do You Expect? (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • See <i>Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>Mid-January through February (13 Days)</p>

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<p>4.1.7.A2 How can we understand and apply the concept of similarity using proportions to find missing measures?</p> <p>4.2.7.C1,2 How can we use a coordinate grid to model and quantify transformations?</p> <p>Also addresses: 4.2.7.B1 How can we apply transformations?</p>	<p>CMP2 – Stretching & Shrinking <i>Understanding Similarity</i></p> <ul style="list-style-type: none"> • Identify similar figures by comparing corresponding parts • Use scale factors and ratios to describe relationships among the side lengths of similar figures • Use the properties of similarity to calculate distances and heights that can't be directly measured (shadows!) • Draw shapes on coordinate grids and then use coordinate rules to stretch and shrink those shapes 	<ul style="list-style-type: none"> • Use real measures of shadows to write and solve proportions • Use overhead projector to enlarge and reduce images • Use dry-erase graph boards to represent transformations • Use activities from <i>Navigating through Geometry</i> 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for Stretching & Shrinking (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • See <i>Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>March (11 Days)</p>

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<p>4.2.7.E1 How can we develop and apply strategies for finding perimeter and area to geometric figures made by combining triangles, rectangles and circles or parts of circles?</p> <p>4.2.7.E2 How can we show that the volume of a pyramid or cone is one-third of the volume of the prism or cylinder with the same base and height?</p> <p>Also addresses: 4.2.7.D1,2 How can we solve problems involving different units of measure and select the degree of precision needed in a particular problem-solving situation.</p>	<p>CMP2 – Filling & Wrapping <i>3-Dimensional Measurement</i></p> <ul style="list-style-type: none"> • Understand volume as a measure of filling as object and surface area as a measure of wrapping an object • Design and use nets to visualize and calculate surface areas of prisms and cylinders • Explore patterns among the volumes of cylinders, cones, and spheres • 	<ul style="list-style-type: none"> • Use rice or sand in plastic 3-D figures to compare volumes of different figures with the same base and height • Create nets to fold into 3-D figures • Find surface areas by cutting apart nets and measuring separate sections • Use cubes to create figures of various volumes and to measure the volumes of figures • Use plastic squares to measure the surface areas of figures • Use activities from <i>Navigating through Geometry</i> 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for Filling & Wrapping (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • <i>See Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>April (10 Days)</p>

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<p>4.3.7.B1 How can we graph functions, and understand and describe their general behavior?</p> <p>4.3.7.C2 How can we use tables, graphs, verbal rules, and algebraic expressions to model linear functions?</p> <p>4.3.7.D2 How can we solve simple linear equations informally and graphically using paper-and-pencil, calculators, graphing calculators, spreadsheets, and other technology (multi-step, integer coefficients only)?</p>	<p>CMP2 – Moving Straight Ahead <i>Linear Relationships</i></p> <ul style="list-style-type: none"> • Recognize problem situations in which two or more variables have a linear relationship to each other • Construct tables, graphs, and symbolic equations that express linear relationships • Solve linear equations 	<ul style="list-style-type: none"> • Use Algebra Tiles to represent linear relationships • PPH <i>Skills & Concepts Review</i> • Graph functions on dry-erase boards • Have 3 teams – table, equation, & graph. Rotate to translate information into each form. • Use spreadsheets, graphing calculators, and other technology • Use activities from <i>Navigating through Algebra</i> 	<ul style="list-style-type: none"> • <i>Special Needs Handbook</i> for Moving Straight Ahead (not assessments) • Questions read aloud • Leveled small groups • Calculator (when appropriate) • Vocabulary charts (bilingual for ELL) • Flip book glossary • Word wall of key terms • Additional time • Periodic notebook maintenance assistance • See <i>Implementing and Teaching Guide</i> p. 87-101 	<p>Pre-Assessment Oral responses Homework Class Practice Quizzes Cooperative work Post-Assessment</p>	<p>May-June (13 Days)</p>

Other essential standards:				
4.4.7.A1, 2 Analyzing data 4.4.7.D1 Vertex-Edge Graphs 4.4.7.C1 Permutations (ordered situations with replacement) vs. Combinations (ordered situations without replacement)				